

An elaboration of the PrimaryConnections 5Es teaching and learning model

PHASE	PURPOSE	ROLE OF TEACHING AND LEARNING ACTIVITY
ENGAGE	<p>Create interest and stimulate curiosity.</p> <p>Set learning within a meaningful context.</p> <p>Raise questions for inquiry.</p> <p>Reveal students' ideas and beliefs, compare students' ideas.</p>	<p>Activity or multi-modal text used to set context and establish topicality and relevance.</p> <p>Motivating/discrepant experience to create interest and raise questions.</p> <p>Open questions, individual student writing, drawing, acting out understandings, and discussion to reveal students' existing ideas and beliefs so that teachers are aware of current conceptions and can plan to extend and challenge as appropriate—a form of diagnostic assessment.</p>
EXPLORE	<p>Provide experience of the phenomenon or concept.</p> <p>Explore and inquire into students' questions and test their ideas.</p> <p>Investigate and solve problems.</p>	<p>Open investigations to experience the phenomenon, collect evidence through observation and measurement, test ideas and try to answer questions.</p> <p>Investigation of text-based materials (for example, newspaper articles, web-based articles) with consideration given to aspects of critical literacy, including making judgements about the reliability of the sources or the scientific claims made in the texts.</p>
EXPLAIN	<p>Introduce conceptual tools that can be used to interpret the evidence and construct explanations of the phenomenon.</p> <p>Construct multi-modal explanations and justify claims in terms of the evidence gathered.</p> <p>Compare explanations generated by different students/groups.</p>	<p>Student reading or teacher explanation to access concepts and terms that will be useful in interpreting evidence and explaining the phenomenon.</p> <p>Small group discussion to generate explanations, compare ideas and relate evidence to explanations.</p> <p>Individual writing, drawing and mapping to clarify ideas and explanations.</p> <p>Formative assessment to provide feedback to teacher and students about development of investigation skills and conceptual understanding.</p>

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EXPLAIN (Continued)	Consider current scientific explanations.	Small group writing/design to generate a communication product (for example, poster, oral report, formal written report or PowerPoint presentation, cartoon strip, drama presentation, letter) with attention to form of argumentation, genre form/function and audience, and with integration of different modes for representing science ideas and findings.
ELABORATE	Use and apply concepts and explanations in new contexts to test their general applicability. Reconstruct and extend explanations and understanding using and integrating different modes, such as written language, diagrammatic and graphic modes, and mathematics.	Student-planned investigations, exercises, problems or design tasks to provide an opportunity to apply, clarify, extend and consolidate new conceptual understanding and skills. Further reading, individual and group writing may be used to introduce additional concepts and clarify meanings through writing. A communication product may be produced to re-represent ideas using and integrating diverse representational modes and genres consolidating and extending science understanding and literacy practices.
EVALUATE	Provide an opportunity for students to review and reflect on their own learning and new understanding and skills. Provide evidence for changes to students' understanding, beliefs and skills.	Discussion of open questions or writing and diagrammatic responses to open questions—may use same/similar questions to those used in <i>Engage</i> phase to generate additional evidence of the extent to which the learning outcomes have been achieved. Reflections on changes to explanations generated in <i>Engage</i> and <i>Evaluate</i> phases to help students be more metacognitively aware of their learning.